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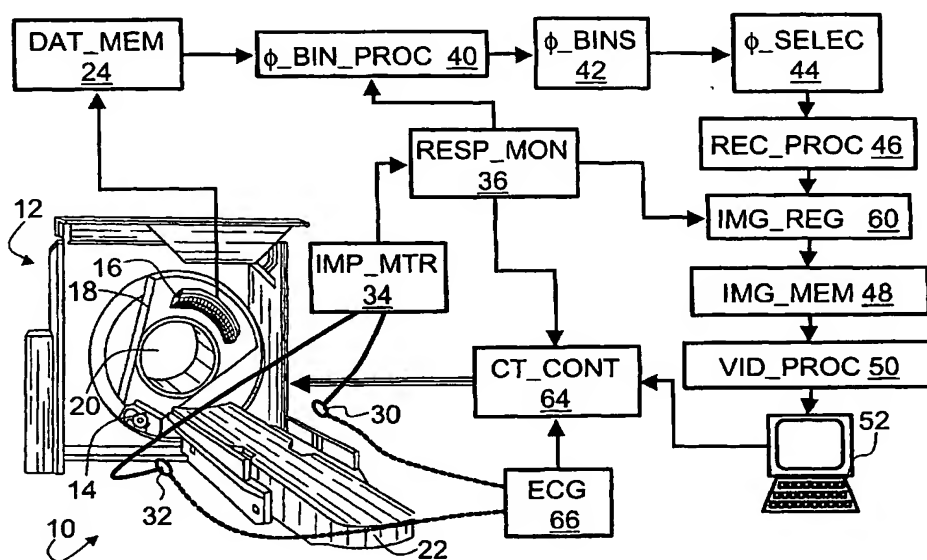
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**(54) Title:** RESPIRATION MONITOR FOR COMPUTED TOMOGRAPHY



**(S7) Abstract:** A medical diagnostic imaging system (10) includes a diagnostic imaging scanner (12) that acquires imaging data of a medical imaging patient. A reconstruction processor (46) reconstructs at least a portion of the acquired imaging data into an image representation. A pair of electrodes (30, 32) contact a thoracic region of the patient. An electrical meter (34) measures electrical resistance  $R(t)$  or another time-varying electrical parameter (70) across the electrode pair (30, 32) during the acquiring of imaging data. A respiration monitor (36) extracts a time-varying respiration characteristic (90, 98, 110, 120) from the measured time-varying electrical parameter (70) to indicate respiratory cycle phase.

# INTERNATIONAL SEARCH REPORT

In International Application No

PCT/IB 03/06260

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 7 A61B6/00 A61B6/03

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	MORI M. ET AL: "Accurate contiguous sections without breath-holding on chest CT: value of respiratory gating and ultrafast CT" AMERICAN JOURNAL OF ROENTGENOLOGY, vol. 162, no. 5, 1994, pages 1057-1062, XP009029406 abstract; figure 1	1-3, 12-17,21
Y	pages 1057-58, paragraph SUBJECTS-METHODS	4, 18
Y	US R E30 101 E (REGENTS OF THE UNIVERSITY OF MINNESOTA) 25 September 1979 (1979-09-25) abstract; figures 1,3,5 column 1, lines 9-45 column 3, lines 58-68	4, 18

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☒ Further documents are listed in the continuation of box C.

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## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 736 284 A (POLZ HANS DR) 9 October 1996 (1996-10-09) figures 1,2 column 2, lines 4-18,46-59 column 6, lines 28-44 -----	1,2,13, 17
A	US 5 727 554 A (ATHANASSIOU CHARALAMBOS N ET AL) 17 March 1998 (1998-03-17) abstract; figures 1,2,4,5 column 1, line 50 - column 2, line 20 -----	1-4, 12-18,21
A	US 5 482 042 A (FUJITA HIDEHIRO) 9 January 1996 (1996-01-09) abstract; figures 1-3,6 column 4, line 43 - column 5, line 51 -----	1-4, 12-18,21

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/IB 03/06260

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US RE30101	E	25-09-1979	US 3340867 A	12-09-1967
EP 0736284	A	09-10-1996	DE 19608971 A1	10-10-1996
			EP 0736284 A2	09-10-1996
			JP 8308834 A	26-11-1996
			US 5924989 A	20-07-1999
US 5727554	A	17-03-1998	AU 4355497 A	14-04-1998
			CA 2266075 A1	26-03-1998
			CN 1230878 A	06-10-1999
			EP 0934022 A1	11-08-1999
			JP 2001505082 T	17-04-2001
			WO 9811822 A1	26-03-1998
US 5482042	A	09-01-1996	JP 7023945 A	27-01-1995